AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A composition for transfecting a chemical substance selected from the group consisting of nucleic acid sequences, proteins, peptides and pharmacologically active chemical substances, characterized in that it consists essentially, in addition to the said chemical substance, of ~~at least~~ one or more transfecting peptide derived from the whole or part of a fibre of an adenovirus selected from the group consisting of Ad2, Ad3, Ad4, Ad7, Ad8, Ad9, Ad11, Ad12, Ad15, Ad16, Ad21, Ad40, Ad41, FAV1 (CELO) and FAV7, which transfecting peptide comprises at least:

- a segment of an NLS sequence derived from an adenovirus fibre [[comprising between 4 and 5 amino acids and including a sequence selected from the group consisting of the following sequences: X_0-Lys-Arg-Val-Arg (X_0KRVR) (SEQ ID NO:1), X_0]], presenting the sequence Ala-Lys-Arg-Ala-Arg ([[X_0]]AKRAR) (SEQ ID NO:2), [[X_0-Lys-Arg-Ser-Arg (X_0KRSR) (SEQ ID NO:3), X_0-Lys-Arg-Leu-Arg (X_0KRLR) (SEQ ID NO:4), X_0-Lys-Arg-Thr-Arg (X_0KRTR) (SEQ ID NO:5), X_0-Pro-Lys-Lys-Pro-Arg (X_0PKKPR) (SEQ ID NO:6), in which X_0 is zero or represents Thr (T), Ala (A), Ser-Lys (SK) or Ser (S), or a segment of the SV40 virus Vp3 protein consisting of the sequence GPNKKKRKL (SEQ ID NO:24),]]

- a hydrophobic sequence [[comprising between 7 and 50 amino acids,]] derived from an adenovirus fibre [[and selected from the group consisting of at least one of the following sequences]], presenting the sequence X_1-Phe-Asn-Pro-Val-Tyr-Pro-Tyr-X_2 (X_1FNPVYPYX_2) (SEQ ID NO:7), [[X_1-Phe-Asp-Pro-Val-Tyr-Pro-Tyr-X_2 (X_1FDPVYPYX_2) (SEQ ID NO:8),]] in which:

X_1 is [[zero or represents a sequence of at most 43 amino acids comprising hydrophobic and/or polar and/or acidic charged amino acids and selected from the group consisting of one of the following sequences: Leu-Ser-Asp-Ser (LSDS) (SEQ ID NO:9),]] the sequence Leu-Ser-Thr-Ser (LSTS) (SEQ ID NO:10), [[Leu-Ser-Ser-Ser (LSSS) (SEQ ID NO:11), Pro-Ser-Glu-Asp-Thr (PSEDT) (SEQ ID NO:12), Val-Asp-Asp-Gly (VDDG) (SEQ ID NO:13), Thr-Gln-Tyr-Ala-Glu-Glu-Thr-Glu-Glu-Asn-Asp-

Asp (TQYAEETEENDD) (SEQ ID NO:14) or X_3-Glu-Asp-Asp (X_3EDD) (SEQ ID NO:15) in which X_3 represents Ala (A), Val (V), Leu (L), Phe (F) or Ile (I)]] and

X_2 is [[zero or represents a sequence of at most 43 amino acids-comprising hydrophobic and/or polar and/or charged amino acids and selected from the group consisting of the following sequences:]] the sequence Glu-Asp-Glu-Ser (EDES) (SEQ ID NO:16), [[Asp-Thr-Glu-Thr (DTET) (SEQ ID NO:17), Asp-Ala-Asp-Asn (DADN) (SEQ ID NO:18), Asp-Pro-Phe-Asp (DPFD) (SEQ ID NO:19), Gly-Tyr-Ala-Arg (GYAR) (SEQ ID NO:20), Glu-His-Tyr-Asn (EHYN) (SEQ ID NO:21), Asp-Thr-Ser-Ser (DTSS) (SEQ ID NO:22) or Asp-Thr-Phe-Ser (DTFS) (SEQ ID NO:23)]] and

- a polymeric sequence of basic amino acids [[or a cationic polymeric sequence or a polyalcohol]].

2. (Currently amended) A composition for transfecting a chemical substance selected from the group consisting of nucleic acid sequences, proteins, peptides and pharmacologically active chemical substances, characterized in that it consists ~~essentially~~, in addition to the said chemical substance, of ~~at least~~ one or more transfecting peptide derived from the whole or part of a fibre of an adenovirus selected from the group consisting of Ad2, Ad3, Ad4, Ad7, Ad8, Ad9, Ad11, Ad12, Ad15, Ad16, Ad21, Ad40, Ad41, FAV1 (CELO) and FAV7, which transfecting peptide comprises at least:

- a segment of an NLS sequence derived from an adenovirus fibre [[comprising between 4 and 5 amino acids and including a sequence selected from the group consisting of the following sequences: X_0-Lys-Arg-Val-Arg (X_0KRVR) (SEQ ID NO:1), X_0]], presenting the sequence: Ala-Lys-Arg-Ala-Arg ([[X_0]]AKRAR) (SEQ ID NO:2), [[X_0-Lys-Arg-Ser-Arg (X_0KRSR) (SEQ ID NO:3), X_0-Lys-Arg-Leu-Arg (X_0KRLR) (SEQ ID NO:4), X_0-Lys-Arg-Thr-Arg (X_0KRTR) (SEQ ID NO:5), X_0-Pro-Lys-Lys-Pro-Arg (X_0PKKPR) (SEQ ID NO:6), in which X_0 is zero or represents Thr (T), Ala (A), Ser-Lys (SK) or Ser (S), or a segment of the SV40 virus Vp3 protein and in particular the sequence GPNKKKRKL (SEQ ID NO:24),]]

- a hydrophobic sequence [[comprising between 7 and 50 amino acids,]] derived from an adenovirus fibre [[and selected from the group consisting of at least one

of the following sequences]], presenting the sequence X_1-Phe-Asn-Pro-Val-Tyr-Pro-Tyr-X_2 (X_1FNPVYPYX_2) (SEQ ID NO:7), [[X_1-Phe-Asp-Pro-Val-Tyr-Pro-Tyr-X_2 (X_1FDPVYPYX_2) (SEQ ID NO:8),]] in which:

X_1 is [[zero or represents a sequence of at most 43 amino acids comprising hydrophobic and/or polar and/or acidic charged amino acids and selected from the group consisting of the following sequences: Leu-Ser-Asp-Ser (LSDS) (SEQ ID NO:9),]] the sequence Leu-Ser-Thr-Ser (LSTS) (SEQ ID NO:10), [[Leu-Ser-Ser-Ser (LSSS) (SEQ ID NO:11), Pro-Ser-Glu-Asp-Thr (PSEDT) (SEQ ID NO:12), Val-Asp-Asp-Gly (VDDG) (SEQ ID NO:13), Thr-Gln-Tyr-Ala-Glu-Glu-Thr-Glu-Glu-Asn-Asp-Asp (TQYAEETEENDD) (SEQ ID NO:14) or X_3-Glu-Asp-Asp (X_3EDD) (SEQ ID NO:15) in which X_3 represents Ala (A), Val (V), Leu (L), Phe (F) or Ile (I)]] and

X_2 is [[zero or represents a sequence of at most 43 amino acids, preferably a sequence of 5 to 15 amino acids, comprising hydrophobic and/or polar and/or charged amino acids and selected from the group consisting of the following sequences:]] the sequence Glu-Asp-Glu-Ser (EDES) (SEQ ID NO:16), [[Asp-Thr-Glu-Thr (DTET) (SEQ ID NO:17), Asp-Ala-Asp-Asn (DADN) (SEQ ID NO:18), Asp-Pro-Phe-Asp (DPFD) (SEQ ID NO:19), Gly-Tyr-Ala-Arg (GYAR) (SEQ ID NO:20), Glu-His-Tyr-Asn (EHYN) (SEQ ID NO:21), Asp-Thr-Ser-Ser (DTSS) (SEQ ID NO:22) or Asp-Thr-Phe-Ser (DTFS) (SEQ ID NO:23),]] which transfecting peptide is combined with a polymeric sequence of basic amino acids[[, a cationic polymer or a polyalcohol]].

3. (Currently amended) The composition according to Claim 1 or Claim 2, wherein the polymeric sequence of ~~the~~ basic amino acids comprises between 10 and 50 amino acid residues, selected from the group consisting of lysine, arginine and ornithine.

4. (Cancelled)

5. (Previously amended) The composition according to claim 1 or 2, wherein the NLS sequence is at the N-terminal end of the transfecting peptide and the polymeric sequence of basic amino acids is at the C-terminal end of the said transfecting peptide.

6. (Previously amended) The composition according to claims 1 or 2, wherein, when the chemical substance is a nucleic acid, the transfecting peptide/nucleic acid ratio is between 0.3:1 and 15:1.

7. (Previously amended) The composition according to claims 1 or 2, combined with a targeting ligand.

8. (Currently amended) A composition consisting ~~essentially~~, in addition to the said chemical substance and to ~~at least one~~ the said transfection ~~vector~~ peptide(s) according to claim 1 or 2, of a suitable vehicle selected from the group consisting of bile salts, antiproteases, cyclodextrins and derivatives thereof, antiseptics and polyols.

9. (Previously amended) A method of transfecting eukaryotic cells *in vitro* with a chemical substance selected from the group consisting of nucleic acid sequences, proteins, peptides and pharmacologically active chemical substances, characterized in that it comprises the bringing into contact and the incubation of a composition according to claim 1 or 2 in a dilution buffer comprising 100 – 150 mM NaCl with eukaryotic cells for 15 to 120 minutes at room temperature, the chemical substance to be transfected:transfecting peptide ratio being between 0.3:1 and 15:1.

10. (Currently amended) A composition for transfecting a chemical substance selected from the group consisting of nucleic acid sequences, proteins, peptides and pharmacologically active chemical substances, ~~containing~~ consisting, in addition to the said chemical substance, ~~at least~~ of one or more transfecting peptide which comprises:

- a segment of an NLS sequence consisting of sequence ID NO:2,

- a segment of a sequence consisting of sequence ID NO:10,
- a segment of a sequence consisting of sequence ID NO:16, and
- a polylysine.

11. (Cancelled)

12. (Currently amended) A composition according to Claim 6 wherein the transfecting peptide/nucleic acid ratio[[n]] is between 2:1 and 6:1.

13. (Previously added) A method according to Claim 9 wherein the ratio of substance to be transfected:transfecting peptide is between 2:1 and 6:1.

14. (Previously added) A method according to Claim 9 wherein the ratio of substance to be transfected:transfecting peptide is between 4:1 and 6:1.

15. (New) A composition according to Claim 3, wherein the polymeric sequence of basic amino acids comprises 20 lysines.

16. (New) A composition according to Claim 3, wherein the polymeric sequence of basic amino acids comprises 10 lysines.